AC Power
For *Business-Critical Continuity™*

Liebert® APM

The Compact Row-Based UPS With Flexpower Technology™
30kW - 300kW

EMERSON
Network Power

Emerson Network Power, a division of Emerson, is a global company that combines technology with design to supply innovative solutions for the benefit of its customers.

Emerson Network Power is the leader in the "***Business-Critical Continuity™***" field, thanks to the company's products and services.

Emerson Network Power's broadband technology base and global expertise support a full spectrum of enterprise-wide solutions for today's vital business needs.

Regardless of your business size, you can't afford for your critical systems to go down and you can't waste time recovering your IT infrastructure after a disruption.

Leave that to us, the experts in Business-Critical Continuity™, from grid-to-chip, from the biggest to the smallest data centers, we are ready to servce your needs with the solutions we have developed.

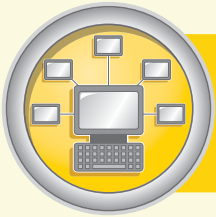
More standardization,
so you don't need further budget allocations to install it.

More simplification,
so you don't need to be a specialist to get the best for your business.

More support,
so while you are enjoying doing business, we are protecting you.

Liebert APM delivers
Efficiency Without Compromise™

Efficiency Without Compromise provides a path to optimize data center infrastructure around design, operating and management efficiencies - while maintaining or improving availability. This is achieved through the proper selection and utilization of cooling, power and monitoring technologies, supported by key services and local expertise.



INFRASTRUCTURE MANAGEMENT
Improving performance of the IT infrastructure and environment

ECO AVAILABILITY
Balancing high levels of availability and efficiency.

The Adaptive Power Manager For Your Changeable IT Infrastructure

The Liebert APM is the compact UPS system designed to operate with the maximum energy efficiency in the minimum footprint for the protection of the small and medium computer rooms.

It features FlexPower™ technology, which incorporates distributed intelligence and scalable power in a common assembly.

It is suitable for small and medium businesses with the attitude to grow fast: thanks to its architecture that enables the UPS system capacity to start as low as 30kW which can grow with the business up to 600kW*.

Lowest Cost Of Ownership

Liebert APM is designed to minimize capital equipment expense, to protect your technology investment and to optimize operational efficiency.

Enhanced Operational Flexibility

In response to the demands for new technologies, adaptability to customer and market's changing needs, Emerson Network Power has developed a scalable platform that allows you to configure your own AC Power system with basic building blocks, that is able to grow accordingly with your future requirements.

"All The Power You Need, Just The Power You Need"

With Liebert APM you can deploy power modules that best match your system rating and its enhanced flat efficiency curve (up to 96% for load above 30% and up to 94% for loads above 20%) ensuring that the system is always optimized dramatically reducing energy waste.

Higher System Availability

Liebert APM provides a mission-critical technology minimizing the single points of failure in your infrastructure. A UPS that delivers the highest possible level of availability to your IT system, with Liebert proven reliability, and by decreasing MTTR with the new hot-swappable power modules.

*On selected configurations

Anticipating Technology Changes Through Adaptive Architecture

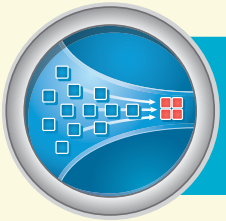
Today, you need a power infrastructure that can work across your enterprise and respond to constant change.

An infrastructure that allows you to deploy blade servers and other high-density equipment safely and cost-effectively.

An infrastructure that can meet the strict power quality requirements of VoIP switches.

An infrastructure that allows you to add capacity without compromising availability or serviceability.

Scalability alone can't get you there. You need an infrastructure that takes it one step further. An infrastructure that can adapt to your needs.



HIGH DENSITY
Delivering high density architectures to minimise space and cost.

FLEX CAPACITY
Adapting to IT changes for continuous optimisation and design flexibility.

Efficient And Adaptive Power For All Your Critical Applications

The Liebert APM by Emerson Network Power is an efficient, space saving and flexible solution for your network.

With Best In class true online double conversion efficiency of 96% in a compact, single frame 19" enclosure, Liebert APM keeps your network protected while saving on cost and data center space.

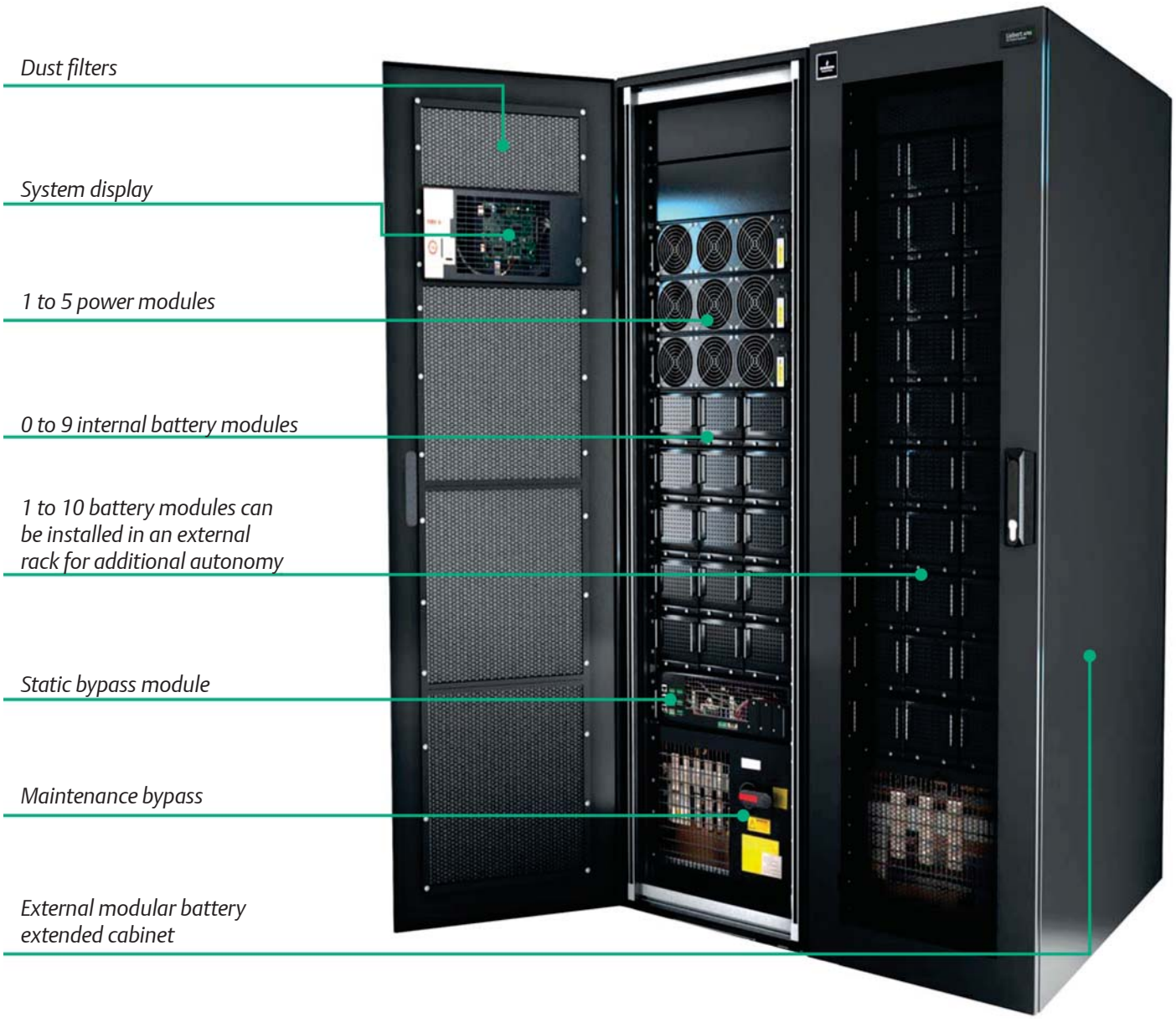
With redundancy options and flexible battery configurations, Liebert APM provides high level of reliability you have come to expect from a Liebert UPS.

- High efficiency rating of up to 96% in true online double conversion mode
- FlexPower Technology™ : Allows the configuration of a completely redundant power system, sized to match the capacity of the protected equipment. The unit capacity is easily added, without increasing the system footprint
- Parallel technology allowing maximum system capacity of up to 600kW, without the need for centralized bypass cabinet and additional external control modules*
- Thanks to the compactness of the power module, the best in the market, within the same rack there is room to accommodate internal batteries providing a backup time up to 30 minutes in the 30kW configuration and up to 5 minutes in the 90kW configuration**. Different combinations of internal and external batteries are available to cope with the various application scenarios
- Flexible battery configuration: 30 to 40 battery blocks per string allow you in most cases to keep your existing battery solution
- Lower mean time to repair (MTTR) with hot swappable modules

*On selected configurations

ENERGY EFFICIENCY
Liebert APM has been designed to be the benchmark of efficiency for double conversion UPS.

MODULARITY
With fewer basic building blocks you can build a power source tailored to your needs and ready to evolve with them.


Dust filters
System display
1 to 5 power modules
0 to 9 internal battery modules
1 to 10 battery modules can be installed in an external rack for additional autonomy
Static bypass module
Maintenance bypass
External modular battery extended cabinet

COMPACT FOOTPRINT
A UPS and Battery system that could give you 60kW of UPS power complete with 10 minutes runtime in just 0.66sqm would be unimaginable just a few years ago!

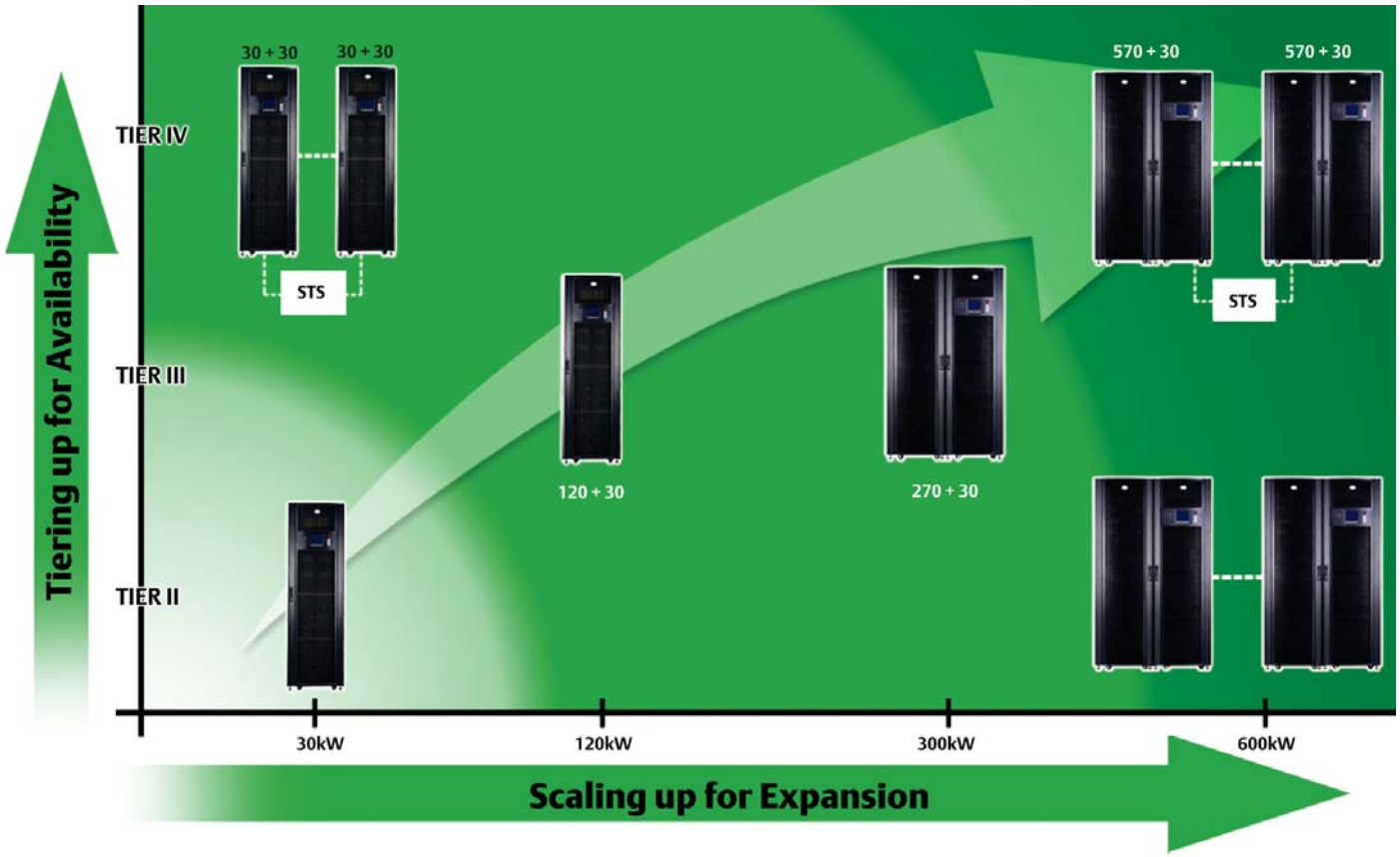
HOT SWAP
Up and running in a few seconds thanks to the hot swappable modules.

WIDER SAFE OPERATING AREA
Lagging or Leading Power factors, there's virtually no load that cannot be driven by Liebert APM

FLEXPOWER TECHNOLOGY™
Liebert APM features Flexpower Technology™, which incorporates distributed intelligence and scalable power in a common assembly.

Liebert APM Grows With Your Business

Over dimensioning your data center represents both a high CAPEX and OPEX (the latter due to an unoptimized data center or computer room). On the other hand under dimensioning it can imply down time and unnecessary installation costs if your equipment does not allow growth and flexibility. Liebert APM is designed for a "pay-as-you-grow" deployment, making this process efficient and convenient.



The Liebert APM UPS system can be utilized with either single or dual power inputs. The dual power features allows you to take advantage of a secondary power source. In addition, up to 4 racks can be paralleled to achieve increased redundancy for more power and 2 sets of racks can be deployed in a Dual Bus architecture.

The Best Investment You Can Make In A UPS System

Efficiency, Reliability And Value In A Compact Package.

Get The Most Out Of Your Investment

- Liebert APM, with its unity power factor (kVA=kW), offers more real power to support customer's mission critical load satisfying the requirements of the latest servers
- With up to 96% online double conversion efficiency, Liebert APM saves you operating cost compared to traditional UPS Systems

Get The Optimum Protection

- Liebert APM's outstanding efficiency curve lets you rely on the protection of Double Conversion Technology without compromising your solution
- High overload protection handles 110% overload for 60 minutes, 125% for 10 minutes, and 150%for 1 minute.

Get The Minimum Footprint

- Liebert APM is a compact UPS with low footprint
- It is the only UPS in the market that can achieve 30 minutes of backup time for 30kW or 10 min for 60kW or almost 5 min for 90kW in just 0.66m^{2} *
- Grows from 30kW to 300kW in a single standard rack cabinet. (additional I/O Box needed)*
- Internal output PDU*
- Internal BCMS*
- Standard Bottom/Top cable entry

Get The Highest Availability

- Liebert APM offers you the possibility to choose between internal module/ vertical redundancy and/or external frame horizontal redundancy up to Tier 4, dual bus configuration without the need any external option of 305V-477V and a frequency tolerance of 40Hz to 70Hz to provide high quality power, even when input parameters are below standard. This helps to minimize the transfer to battery, reducing the charging and discharging cycles
- Back-feed protection sensing ensures system integrity

Modular design of Liebert APM allows you to swap power modules without disrupting the whole system

- Replacing failed battery strings can be made by swapping the new battery module while system is running
- With Liebert APM's modular design lowers the UPS system's MTTR at the same time increasing system availability

Get The Liebert APM, Simply with Additional Features

- Monitoring: Offers communications through Web, Modbus and SNMP protocol
- Flexibility: Allows variable number and type of batteries, from single to multi-unit configurations, and an array of internal and external power and communication options
- Ultra-quiet operations with noise levels below 52 dBA
- Long battery life with wide input voltage tolerance down to 305V, reducing transfers to batteries. Moreover, temperature compensated battery charging extends battery life

*on selected configurations

Adaptive Power Management thru Liebert APM

Scalable Power and Distribution*

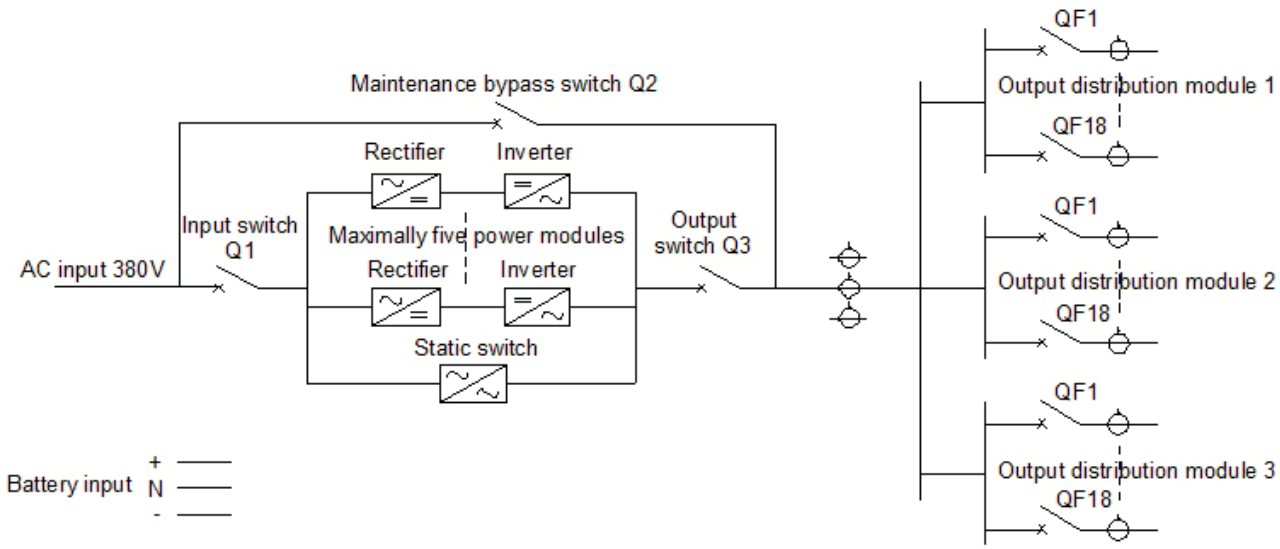
Designed to improve the utilization and management of your IT systems, Liebert APM increases your system's availability and flexibility as you deal with change. The features of Liebert APM flex as IT applications and systems evolve, removing constraints to growth and allowing you to implement new systems and applications while leveraging on your initial investment.

- ***Scalable*** – Designed to power high density equipment, the Liebert APM comes in power ratings of 30, 60, 90, 120 and 150kW in N+1 redundancy
- ***Modular*** – Its modular redundancy features allow capacity to grow as needed while reducing maintenance cost. Its modules are hot-swappable, allowing more flexibility for the user.
- ***Adaptive*** – Easy to configure dual-bus system. Users can also choose battery cell quantity from 30, 32, 36, 40 x 12V battery block

As row solution for power protection, Liebert APM features FlexPower™ technology, which incorporates distributed intelligence and scalable power in a common assembly.

Liebert APM does not only benefit the user with a scalable solution by adding power modules to a UPS for future expansion. It offers more than power scalability for availability as it also addresses power distribution among the equipment in the data center in a scalable manner.

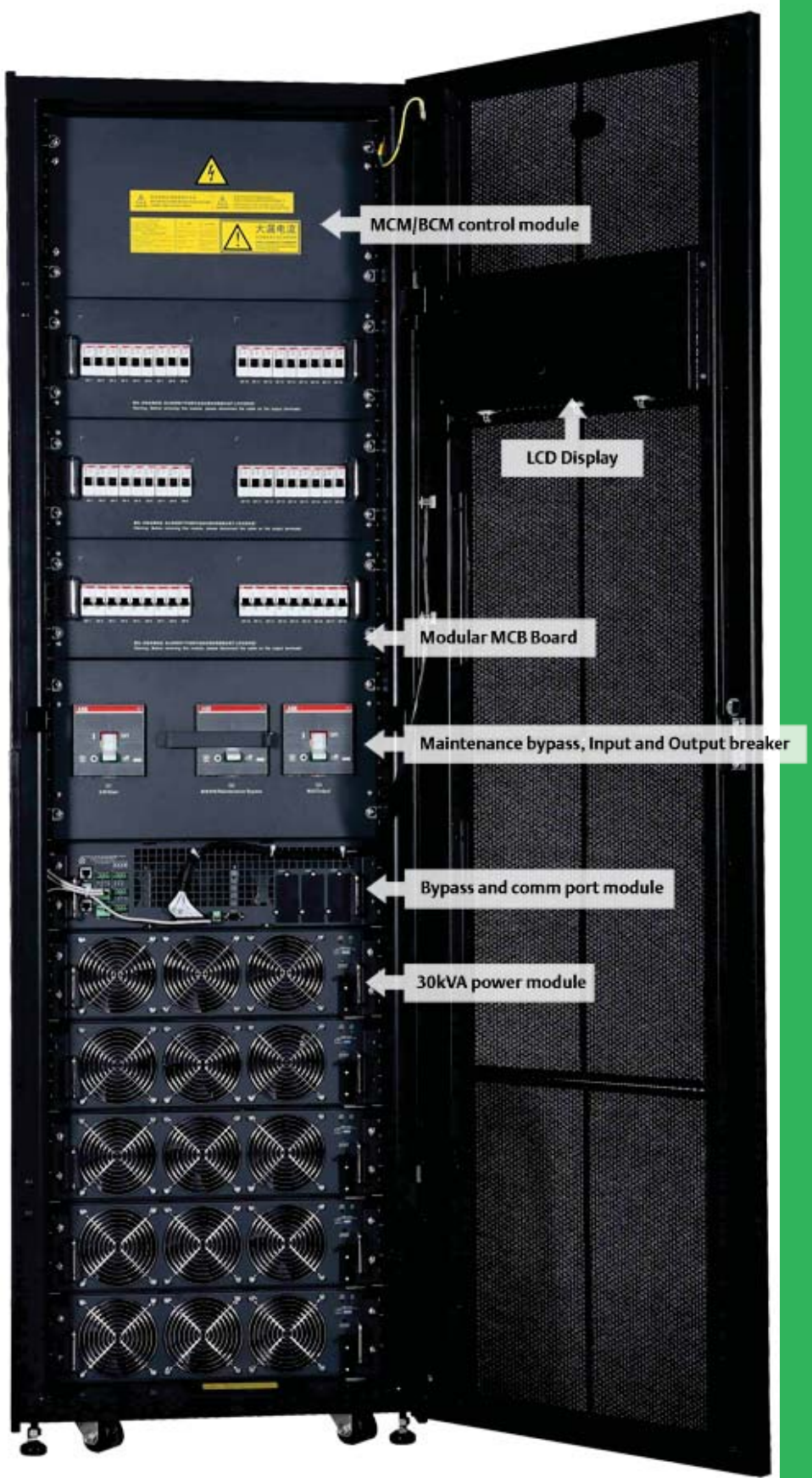
As an Adaptive Power Manager, Liebert APM provides a long term solution for power distribution for vertical scalability. This means that whichever way the data center grows and expands, whether by adding loads to a UPS module or adding more servers and racks, Liebert APM provides increased redundancy in power distribution as well as power availability.



In turn, this enables the data center to scale up and be more flexible as its availability goes from Tier 2 to Tier 3. Liebert APM allows the user to easily add modules using a plug-and-play structure while distributing work load through its intelligent control system.

*on selected configurations

Integrated Power and Distribution Management in a Modular Rack



Unique in its class, the Liebert APM provides complete, high efficient power
protection and distribution in a single cabinet, eliminating the complexity of
two-stage power distribution.

- UPS and battery systems fit in an IT rack
- Built-in 30kW rack-mounted UPS (weight 35kg, height: 3U, up to 5 sets paralleled in one rack)
- Built-in swappable 150kW bypass module
- Built-in input/output distribution switch and manual maintenance bypass
- Built-in intelligent server power management system SPM, able to detect status, voltage, current, power factor, harmonic and electricity consumption of each branch, and set 2-level current load pre-warning
- Optional swappable distribution module with 18-way circuit breaker for expansion and output distribution circuit adjustment
- Optional hot swappable circuit breaker. Branch switch expansion or load phase adjustment can be done without turning off the main circuit UPS power supply. Load distribution uses dynamic configuration, with the UPS capacity and number of load distribution circuits changed with the increase in IT systems.

Meeting Your Power Demand

Energy Efficient:
- Up to 96% Efficiency at 50-75% load; Up to 95% Efficiency at 25% load. Input Power Factor ≈1; Input Harmonic current <3%

Powerful Loading Capacity:
- Output Power Factor ≈1 with leading and lag power factor (no derating)

Easy to Install:
- Top/bottom cable inlet/outlet available; Needs no feeder cabinet; Integrates UPS and power distribution in a single cabinet

Easy to Maintain:
- Front access provides easy bypass maintenance and replacement of rectifiers, inverters and fansy

Easy to Configure:
- Battery adopts 12Vx30/32/34/40 cell design and features flexible configuration. Original battery system can be modified and poor cells can be replaced without affecting UPS performance.

Taking into account the growing need for higher availability and energy efficiency, Liebert APM provides 96% efficiency and is most suitable for midsize data centers of financial & securities, IDC and enterprise markets.

To meet your power demand, Liebert APM allows you to parallel up to two Liebert APM each with 300kW of highest power quality to support your growing business' power need. You can start having 30kW of power to grow up to 600kW as your business grow without sacrificing your systems efficiency and availability.

To further support your business' growth and power demand, you can configure Liebert APM as a standalone UPS configuration or you can use Liebert APM in either parallel or dual bus configuration to increase your system's availability all by just adding parallel or LBS cables between APM UPS systems.
(configuration shown in page 6)

Liebert APM will be available in modular racks of your choice for 150kW and 300kW in a single rack. Which ever you go with, rest assured that you will get the same rich features, high efficiency & maximum availability UPS for your mission critical systems.

Monitoring And Control Capabilities That Keep You Informed

Liebert APM has a large display that leads the user through logical menu sequences to view the required information. The micro-processor based display is autonomous of the system control logic. The simple menu-driven system virtually eliminates the possibility for human error. The large display can be set to show a system one-line diagram or mimic panel. It can also display advanced metering information, alarms, configuration or start-up/ shutdown/transfer information.

- Quickly check operational status
- Monitor power flow through UPS along with all meter readings
- Menu-driven operator procedures to ensure safe operation
- Check status reports and history files
- Adjustment of programmable parameters (access limited by security access function)

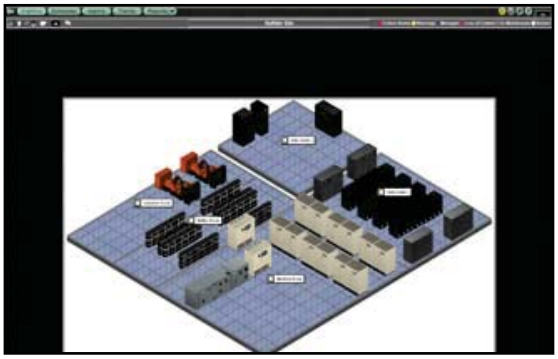
Centralized Monitoring And Control For The IT Enviroment

Intended for the IT Manager, Liebert Nform™ is a network communications system that will enable you to leverage the distributed monitoring capabilities of your network connected equipment. This software solution combines full-scale monitoring with cost-effective deployment through the use of the existing network infrastructure. It is both scalable and adaptable so it can grow as your systems expand and business needs change. Liebert Nform™ can be configured to monitor your Liebert APM for alarm notifications. These alarms can be processed to trigger event actions such as email alerts or local notifications.

Liebert Nform - Monitoring Software 4.0

Centralized Monitoring And Control Through Your Existing Network

Liebert Sitescan is a centralized site monitoring system assuring maximum visibility and availability of your critical operations. Liebert Sitescan Web allows you leverage Web technology to oversee and control critical support systems - anywhere, anytime. Liebert SiteScan Web allows you to monitor and control virtually any piece of critical support equipment - whether it's located in the next room or in a facility on the other side of the country. The web-based system provides centralized oversight of any Liebert precision air, power and UPS units, as well as many other analog or digital devices. Features include real-time monitoring and control, data analysis and trend reporting, and event management.



Liebert SiteScan® Web

Note: Please consult Emerson representative for software compatibility.

Technical Specifications

Model		Liebert APM	
Power (kVA/kW)		30 - 150	30 - 300
Physical Parameters			
W x D x H (mm)		600 x 1100 x 2000	1200 x 1100 x 2000
Weight (kg)		420 (weight w/out internal batteries)	670
Input features (rectifier)			
Rated input voltage		380/400/415VAC, three-phase four-wire	
Rated operating frequency		50/60Hz	
Input voltage range		305V - 477V, 209V - 304V with linear derating up to 70% load	
Input frequency range		40Hz - 70Hz	
Input power factor		> 0.99 at full load, > 0.98 at half load	
Input THDi *		<3%	
Input walk-in function		Available, 5 - 30s settable	
DC Features			
Charger output voltage regulation accuracy		1%	
DC ripple voltage		≤1%	
Output Features (inverter)			
Inverter output voltage		380/400/415VAC, three-phase four-wire	
Output power factor		1 (kW=kVA)	
Voltage stability	Steady State	< ± 1% typical	
	Transient State	< ± 5% typical	
Steady state response time		< 20ms	
Inverter overload capacity		1 hour for 110%, 10mins for 125%, 1mins for 150%, 200ms for >150%	
Phase shift	With 100% balanced load	< 1°	
	With 100% unbalanced load	< 1°	
Total THD (THDv)	100% linear load	< 1%	
	100% nonlinear load	< 4%	
Frequency		50Hz / 60Hz (settable)	
Slew rate		0.6 HZ / sec	
Measured frequency precision (internal clock)		50Hz/60Hz ± 0.02%	
Bypass			
Bypass input voltage		380/400/415VAC, three-phase four-wire	
Bypass voltage range		Default: -20% - +15%, other values, such as -40%, -30%, -10% - +10%, +15% settable through software	
Bypass overload capacity		Long term for 110%, 1 hour for 170%, 100ms for 1000%	
SPM intelligent distribution system * *			
Number of branch switches		18 routes x 3	
Capacity of branch switches		25A as standard, 10 - 63A optional	
Monitoring function		Main circuit and branch ON/OFF status, voltage, current, power factor, harmonic, electricity consumption, 2-level current pre-warning	
System			
Paralleling		Up to 4*	Up to 2
System efficiency		up to 96% at =>50% load up to 95% at =>95% load	
Operating environment			
Operating temperature range *		0 - 40°C (For details, refer to user manual)	
Storage temperature		-25 - 70°C (excluding battery)	
Relative humidity		0 - 95%, no condensing	
Maximum operating altitude		≤1000m, When operating at 1000 - 2000m, derated by 1% for every 100m increase of altitude	
Noise (1m) (max capacity)		56	65
IP class		IP20 (with built-in dust filter)	
Standards		Safety: IEC60950-1; IEC62040-1-1/AS62040-1-1, EMC: IEC62040-2/AS62040-2/ EN50091-2 CLASS A; Design and test: IEC62040-3/AS62040-3	

* Conditions apply
* * On selected configurations only

Please consult with Emerson representative for specific Liebert APM configuration

Emerson Network Power Asia

Australia
T: 1800-065345
F: 61-2-97438737

Indonesia
T: 62-21-2513003
F: 62-21-2510622

Japan
T: 81-3-54038594
F: 81-3-54032924

Korea
T: 82-2-34831500
F: 82-2-5927883

Malaysia
T: 603-78845000
F: 603-78845188

New Zealand
T: 64-3-3392060
F: 64-3-3392063

Pakistan
T: 92-42-36622526 to 28
F: 92-42-36622530

Philippines
T: 63-2-7207400
F: 63-2-6203693

Singapore
T: 65-64672211
F: 65-64670130

Thailand
T: 66-2-6178260
F: 66-2-6178277 to 78

Vietnam
T: 84-4-37628908
F: 84-4-37628909

While every precaution has been taken to ensure the accuracy and completeness of this literature, Emerson Network Power assumes no responsibility and disclaims all liability for damages resulting from use of this information or for any errors or omissions.

Emerson, Business-Critical Continuity and Emerson Network Power are trademarks of Emerson Electric Co. or one of its affiliated companies.

©2012 Emerson Electric Co.
All rights reserved throughout the world. Specifications subject to change without notice.

Emerson Network Power.
The global leader in enabling *Business-Critical Continuity™.*

- **AC Power**
- Connectivity
- DC Power
- Embedded Computing
- Embedded Power
- Industrial Power
- Infrastructure Management & Monitoring
- Outside Plant
- Power Switching & Controls
- Precision Cooling
- Racks & Integrated Cabinets
- Services

www.EmersonNetworkPower.Asia

AP12ENT-APM300V3-BR